



September 9, 2015

2015 SEP 11 AM 10:09

State of Tennessee
Department of Environment and Conservation
Tennessee Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, Tennessee 37243

**RE: Request for Determination
Of Insignificant Source
Emergency Generator
McKenzie Regional Hospital
McKenzie, TN**

Transmitted via Email
Air.Pollution.Control@tn.gov

09-0144

Dear TDEC/TDAPC:

Please consider this letter a request for determination that the emergency generator located at the McKenzie Regional Hospital, McKenzie, TN, is an insignificant emission unit under Tennessee Division of Air Pollution Control (TDAPC) regulations and does not require a Tennessee Division of Air Pollution Control permit.

The emergency generator (Unit 501820369) located at the above referenced facility is a 125 kilowatt (kW) generator installed in 2004. Air emissions estimated assuming operation of the unit at 500 hours per year (hrs/yr) are less than 5 tons per year for each criteria air pollutant and less than 1,000 pounds per year (lbs/year) for each hazardous air pollutant, indicating that the generator meets the definition of an insignificant emission unit. Attachment 1 presents the potential to emit (PTE) emission calculations for this unit.

Since the unit is stationary and was constructed before June 12, 2006, it is considered an "existing engine" under the 40 CFR 63, Subpart ZZZZ, and National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, i.e., the RICE NESHAP. However, the emergency generator has been determined to be institutional emergency engine; therefore, does not have any requirements under the RICE NESHAP.

Based on this analysis, it is our understanding that the emergency generator does not require an air pollution control permit, and we respectfully request issuance of a determination of agreement from the TDAPC.

If you have any questions regarding this request, please contact Randy Chandler of McKenzie Regional Hospital at 731-352-5344.

Sincerely,
McKenzie Regional Hospital

ATTACHMENT 1 - EMISSIONS ESTIMATE

**Calculation of Emissions for Emergency Generator
MCKENZIE REGIONAL HOSPITAL
MCKENZIE, TN**

Unit	Generator Rating (kw)	Generator Rating (hp)	Heat Input (MMBtu/hr)	Run Time (1) (hr/yr)	Annual Power Output (Kw-hr/yr)	Annual Heat Input (MMBtu/yr)
Emergency Generator	125	167.625	1.173375	500	62500	83812.5

(1) No operating limit for emergency generators used under emergency situations; assumed 500 hour/year for emissions
Average usage is approximately 66 hours per year.

Calculation of Unit Rating

$$\text{Unit rating (kw)} \times 1.341 \text{ (hp/kw)} = \text{Unit rating (hp)}$$

Calculation of Heat Input

$$\text{Generator Rating (kw)} \times 1.341 \text{ (hp/kw)} \times 7000 \text{ (BTU/hp-hr)} / 1,000,000 \text{ (BTU/MMBtu)} = \text{Heat Input (MMBtu/hr)}$$

Note: The emission factors in AP-42 take into account the approximately 35% efficiency of internal combustion engines.

Emissions Evaluation

Constituent	Source	Emission Factor (lb/hp-hr)	Emissions (lb/hr)	Emissions (lb/year)	Emissions (tons/year)
NOx	AP-42	0.03100	5.20	2598.19	1.30
CO	AP-42	0.00668	1.12	559.87	0.280
TOC	AP-42	0.00251	0.42	210.37	0.105
Nonmethane HC (VOC)	AP-42	0.00228	0.38	191.44	0.096
PM10 (TSP)	AP-42	0.00220	0.37	184.39	0.092
SO2	AP-42	0.00205	0.34	171.82	0.086

Conversion factors:

0.002205 lb/gram

0.0005 tons/lb

Notes:

Assumes VOCs represent 91% of total organic carbon emissions.

AP-42 Chapter 3.3, 10/96.

Constituent	Max. Heat Input (MMBTU/hr)	HAP Emission Factor (lb/MMBTU)	HAP Emissions (lb/hr)	Hours of Operation (hrs/year)	Total Emissions (lb/yr)	Conversion Factor (ton/lb)	Total Emissions (TPY)
Benzene	1.173375	9.33E-04	1.1E-03	500	5.47E-01	0.0005	2.74E-04
Toluene	1.173375	4.09E-04	4.8E-04	500	2.40E-01	0.0005	1.20E-04
Xylenes	1.173375	2.85E-04	3.3E-04	500	1.67E-01	0.0005	8.36E-05
Propylene	1.173375	2.58E-04	3.0E-04	500	1.51E-01	0.0005	7.57E-05
1,3-Butadiene	1.173375	3.91E-05	4.6E-05	500	2.29E-02	0.0005	1.15E-05
Formaldehyde	1.173375	1.18E-03	1.4E-03	500	6.92E-01	0.0005	3.46E-04
Acetaldehyde	1.173375	7.67E-04	9.0E-04	500	4.50E-01	0.0005	2.25E-04
Acrolein	1.173375	9.25E-05	1.1E-04	500	5.43E-02	0.0005	2.71E-05
Naphthalene	1.173375	8.48E-05	1.0E-04	500	4.98E-02	0.0005	2.49E-05
Acenaphthylene	1.173375	5.06E-06	5.9E-06	500	2.97E-03	0.0005	1.48E-06
Acenaphthene	1.173375	1.42E-06	1.7E-06	500	8.33E-04	0.0005	4.17E-07
Fluorene	1.173375	2.92E-05	3.4E-05	500	1.71E-02	0.0005	8.57E-06
Phenanthrene	1.173375	2.94E-05	3.4E-05	500	1.72E-02	0.0005	8.62E-06
Anthracene	1.173375	1.87E-06	2.2E-06	500	1.10E-03	0.0005	5.49E-07
Fluoranthene	1.173375	7.61E-06	8.9E-06	500	4.46E-03	0.0005	2.23E-06
Pyrene	1.173375	4.78E-06	5.6E-06	500	2.80E-03	0.0005	1.40E-06
Benzo(a)anthracene	1.173375	1.68E-06	2.0E-06	500	9.86E-04	0.0005	4.93E-07
Chrysene	1.173375	3.53E-07	4.1E-07	500	2.07E-04	0.0005	1.04E-07
Benzo(b)fluoranthene	1.173375	9.91E-08	1.2E-07	500	5.81E-05	0.0005	2.91E-08
Benzo(k)fluoranthene	1.173375	1.55E-07	1.8E-07	500	9.09E-05	0.0005	4.55E-08
Benzo(a)pyrene	1.173375	1.88E-07	2.2E-07	500	1.10E-04	0.0005	5.51E-08
Indeno(1,2,3-cd)pyrene	1.173375	3.75E-07	4.4E-07	500	2.20E-04	0.0005	1.10E-07
Dibenz(a,h)anthracene	1.173375	5.83E-07	6.8E-07	500	3.42E-04	0.0005	1.71E-07
Benzo(g,h,i)perylene	1.173375	4.89E-07	5.7E-07	500	2.87E-04	0.0005	1.43E-07
				Total:	2.42		0.001